

USEPA/OECA/OC
State and Tribal Assistance Grants (STAG) FY 2001
New York: Measuring Compliance Assistance Outcomes in New York State
Semi-annual Report 2, FY2003
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**Semi-Annual Reporting Form for EPA's 2000 and 2001
Enforcement and Compliance Assurance Grants**

Reporting Period: Fiscal Year: 2001-2002 Months: Aug 2002-Jan 2003

I. Information

State and Department: New York State Department of Environmental Conservation (DEC)
Pollution Prevention Unit (P2 Unit)

Title of Project: *Measuring Compliance Assistance Outcomes in New York State*

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Funds Received by State: \$94,485 - August 1, 2001
(amount and date)

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II. Status of Project Milestones

**Table 1:
Milestones and Completion Dates**

Project Milestones	Anticipated Completion Date:		Completion Date
	Original	Revised	
Develop output/outcome measures for the M2P2 Program and workshops/manuals	Oct 2002	Aug 2003	Ongoing
Establish reporting system and policy and procedures	Nov 2002	Jul 2003	Ongoing
Implement output/outcome measures for M2P2 Program	Dec 2002	Aug 2003	Ongoing

General analyses of M2P2 Program facilities	Sep 2002	Jul 2003	Ongoing
Revise output/outcome measures as a result of general analyses	Nov 2002	Jul 2003	Ongoing
Conduct site-specific analyses	Sep 2002- 2002- Dec 2002	Sep Jul 2003	Ongoing
Analyze, aggregate, and summarize collected information	Jan 2003- Feb 2003	Aug 2003	Ongoing
Implement output/outcome measures for workshops/manuals	Feb 2003	Aug 2003	Ongoing
Develop Evaluation Form and two Followup Survey Forms (include forms redesign as required)	July 2002		July 2002
Conduct workshops/distribute manuals	Sept 2001- 2003- Jan 2003	Feb Aug 2003	Feb 2003
Distribute two Followup Survey Forms	Jan 2002- Jan 2003	June 2003	Ongoing
Record, QA/QC, and validate information	Aug 2002 - Jan 2003	Feb 2003- Aug 2003	Ongoing
Analyze, aggregate, and summarize collected information	Aug 2002 - Jan 2003	Feb 2003- Aug 2003	Ongoing
Design and implement measures database	Sept 2001 - 2003- Jan 2003	Feb Aug 2003	Ongoing
Report results/make collected information available	April 2003	Aug 2003	Ongoing

Status of Project Completion

It is anticipated that the project will be completed by, or before, the end of September 2003.

II. Results

Three P2 Unit program activity areas and related metrics development and implementation activities are being addressed in this grant. These are (a) P2/Compliance Assistance Workshops and Manuals, (b) the M2P2 Integrated Facility Management Program, and (c) the P2 Unit's *Metrics Listing*. Project activities and accomplishments (as well as related implementation issues) for each of these activity areas are outlined and summarized in the respective section, below.

A. P2/Compliance Assistance Workshops and Manuals

Survey Activity

This is a sector-based technical outreach effort. The P2 Unit coordinates and runs the workshops and produces complementary P2/environmental compliance manuals. These manuals assist attendees in keeping their activities and operations in compliance and in developing and implementing P2 and other environmental improvement initiatives.

Data are collected by distributing an Evaluation Form at each workshop held by the P2 Unit. A (1st) Followup Survey Form is distributed to the workshop attendees approximately six months after the date of the workshop, and a 2nd Followup Survey Form is distributed about one year after the date of the workshop. The Evaluation Form is used to collect information about the workshop and its impact while the Followup Forms are designed to obtain similar information about the Manuals, which are usually supplied at the workshop. A database was developed to collect and store data input from the site survey form (see below).

During the reporting period, the following survey activity took place:

**Table 2:
P2 Unit: Survey Activity from 8/02/02 through 2/04/03**

Type of Form	Type of Workshop (No. of Workshops)	No. Surveyed	No. of Responder s	% Response
Workshop Evaluations	Marinas 2 nd Series (5)	225	91	40%
1 st Followup Survey Forms	Health Care (1)	59	0	NA
2 nd Followup Survey Forms	Health Care (5)	8	4	50%

The Unit plans to send out Followup forms to the attendees at the Marina (1st and 2nd Series) and the Auto-Recyclers Workshops, but this has to wait until the related manuals are printed and distributed to workshop attendees. All non-personal services have been frozen by the Division of the Budget.

Survey Response Rates

Looking at Table 3, below, it can be seen that while there were 75 Evaluation Forms (76% response rate) for the four metal finisher workshops (2nd Series) and 169 Evaluation Forms (64% response rate) obtained for the four State Agency workshops (1st Series), both in 2001, there were smaller percentage response rates for the later workshops (15% to 57%). The higher response rates allow users of the data to use the metal finisher and the State Agency data with a high degree of assurance that the survey results were representative of the workshop attendee population from which they were collected. (Each data set can be used with a 95% confidence level and with, respectively, less than a 5% and about a 5% sampling error.) Only the Auto-Recycler and the Hospital workshops, with the lowest response rates - respectively, 15% and 33%, are so low that they cannot be used to validly generalize about their respective sampled populations.

Looking at Table 3, below, it can be determined that, compared to the relatively high response rates for Evaluation Forms for Metal Finishers (2nd Series), State Agencies (1st Series), and Hospitals, the First Followup Forms have a much lower percentage of response. These were respectively 76% vs 16%, 64% vs 20%, and 33% vs 8%, which makes the sample sizes too small to be statistically valid. However, the information is still valuable because it documents outcome improvements at the particular facilities that responded.

Table 3:
P2 Unit Workshops from 4/25/00 to 2/4/03

(Note: figures in the "Forms" columns are the number of potential responders/actual responders, and in parenthesis the percentage of actual to potential responders)

Sector	Evaluation Form*	1st Followup Form*	Notes
Metal Finishers (2)	99/75 (76%)	84/13 (16%)	
State Agency (1)	263/169 (64%)	263/52 (20%)	
Hospitals	169/56 (33%)	163/11 (8%)	
Marinas (1)	200/112 (56%)	see note	waiting manual issuance

State Agency (2)	251/142 (57%)	see note	1st-followup will be sent out shortly
Auto-Recycler	388/54 (15%)	see note	waiting manual issuance
Marinas (2)	225/91 (40%)	see note	waiting manual issuance

Possible ways to increase the response rate for future followup efforts, which P2 Unit staff have discussed and considered, may be to shorten the Followup Form to make it look less intimidating and/or, instead of sending only a mailing, shifting to phone calls only, or a mailing with a phone call followup, or a phone call followed by a phone call.

The problem with shortening the Followup forms is that they were carefully designed to capture the full range of outcome information. If the forms are shortened, it may not be possible to obtain all of the desired information that is being sought. This is important because of all of the outcome information, the Unit is most interested in collecting information about environmental and financial impacts. Given the importance of these data sets, ensuring a concomitant high degree of accuracy is obviously desirable.

Also, if all of the outcome information is retained on the form, a single phone call may increase the overall percentage of response, but it will probably result in less reliable and accurate information - especially for the more complicated environmental and financial outcome information. This is because the responder may not have ready access to that information or the information may not have been previously calculated. If an attendee obtains a mailed form, it is predicted that if he/she responds, the responder will more likely take the time to get environmental and financial (as well as other) information right. A followup phone call to the first phone call (or for that matter, a mailing), indicating that the Unit would get back to the responder within a reasonable time span in order to give time for this information to be obtained, might produce the desired results, but it would of course increase the cost of and time span for doing the survey,

Workshop Database

After using spreadsheets earlier in the project, a database was developed during this period for data entry from the Workshop Evaluation Form. This effort included designing an input screen and output report formats. Data from the Forms for the five Marina Workshops - 2nd Series have been entered into the database, and summaries for each workshop were generated. Development of databases is planned for the Followup Forms.

B. M2P2 Integrated Facility Management Program

Since its initiation in 1993 and up to the present, a total of about 300 New York State facilities have been selected for participation in DEC's Integrated Facility Management Program, aka, the Multi-Media Pollution Prevention (M2P2) Program. This program is coordinated by the P2 Unit and runs out of DEC's nine regional offices, each of which annually selects a number of facilities to be subjected to a comprehensive, "multi-media" inspection by a team of its staff from the various media-specific environmental quality units involved with the facility. Following the inspection, the team issues a comprehensive inspection report reporting all incidences of non-compliance, as well as identifying potential P2 and other environmental improvement opportunities.

Database Analyses

M2P2 Facility Database Construction

The M2P2 Facility Database, containing facility names and identification numbers and descriptive information about each of the M2P2 facilities, was QA/QC'd and finalized during the previous reporting period. This database consists mostly of facilities in the New York State (NYS) Resource Conservation and Resource Recovery Act (RCRA) Biennial Reporting System (BRS) and/or the Federal Toxic Release Inventory (TRI), but also ones that are not in either. This data was run against the NYS BRS database and the Federal TRI database in order to extract, respectively, NYS hazardous waste generation and TRI chemical release amounts for each of the M2P2 facilities. A goal is to determine whether there is a statistically detectable difference in hazardous waste generation and/or toxic chemical release between facilities subject to or not subject to the Initiative.

BRS/TRI Database Analysis

In regards to the TRI, data were generated for all facilities in the TRI database for the years 1991-2000, and (using TRI ID #s) for all 1993-1998 M2P2 facilities. Data for all facilities in the TRI database were then graphed against the data for all of the 1993-1998 M2P2 facilities from 1991-2000.

In regards to the BRS, the P2 Unit acquired a copy of the "BRState Data Entry, Translation, and Reporting System" (BRS DETRS) developed by Florida's Department of Environmental Protection. This system increases the ease with which BRS data can be organized and manipulated. The NYS BRS data from 1991-2000 were imported into Florida's system. Data totals were then generated for all the facilities in the BRS system by year and extracted (using RCRA ID #'s) for all of the 1993-1998 M2P2 facilities by year.

The non-aqueous waste data from Florida's BRS DETRS system for 1996-2000 was inconsistent with the amounts reported in DEC's Division of Solid and Hazardous Materials's (DSHM's) *Generation and Management of Hazardous Waste in New York Annual Reports*, while total waste amounts were consistent with the same reports. Based on this, it was decided to use the total waste amounts instead of the non-aqueous waste amounts for the M2P2 facility analysis.

Data from 1991-2000 of all New York State BRS facilities were graphed and compared to the data for from all of the 1993-1998 M2P2 facilities. The total BRS waste amounts have been generated for each facility for each year. Release data have also been graphed with TRI data for several facilities to depict and interpret trends in releases and emissions. Thus far, BRS data for 62 facilities and TRI data for 71 facilities have been graphed using data from 1991-2000.

Site Visits/Facility Selection

From August to September, TRI and BRS data for individual M2P2 facilities were reviewed to help in choosing facilities at which to conduct the planned site visits. Facilities that were focused on were those that have received an inspection report from the Region, following the M2P2 inspection. This list is made up of 118 facilities. Of these, 43 facilities have been graphed using both their TRI and BRS data. The TRI data and the BRS data are plotted on one graph using two y-axes against the year data on the x-axis. Some facilities did not report both TRI and BRS data, resulting in 19 facility graphs having only BRS data and 28 facility graphs having only TRI data.

TRI and BRS data for individual M2P2 facilities were also reviewed to identify those facilities which exhibited reductions in BRS and/or TRI amounts following their inspection during the 1993-1998 period. By September, a list of 45 M2P2 facilities had been produced that met the BRS and/or TRI reduction, inspection, and inspection report (with at least one P2 or other environmental improvement) criteria. However, it should be noted that in January it was decided to broaden the selection criteria, selecting from those facilities that had been inspected, whether or not an inspection report had been produced, and whether or not the facility had reductions in its BRS generation or TRI release amounts.

Planned Site Visits

From September through December, Unit staff worked on and produced a seven-page draft discussion document titled *Plan for M2P2 Facility Site Visits*. It contains the following seven sections: Nature and Purpose of the Survey; Suggested Scenario; Survey Form Design; Facility Selection Criteria and Site Visit Sequencing; Sample Size and Statistical Validity; Questions for Discussion and Decision Making; Decisions Made; and Summary/Next Steps. This activity stimulated and facilitated discussion about facility selection, preparation of survey form, and site

visits schedules. These discussions included consideration of the Unit's wider and longer term metrics collection and reporting efforts and their future use.

Survey Form

From October to January, Unit staff developed and finalized a final draft 4-page "Survey of M2P2 Facilities" form - with (potentially) six pages of appendices (copy attached) which the Unit planned to use to facilitate the collection of existing information and from the site visit/surveys. This form will collect information in two major areas: (a) evaluations of the strengths and weaknesses of the M2P2 process, as well as improvement recommendations, and (b) collection of outcome information - changes in client awareness/understanding, client behavior, and the financial and environmental impact of those changes. The first set of information will be collected from personnel working for the facility (the owner, operator, and/or - in the case of a larger facility - the environmental manager) and the second set of information will be collected from the DEC Facility Manager, the P2 Unit's Facility Summary Forms and M2P2 Inspection Reports, other DEC - as well as EPA - information sources, and the facility personnel identified above.

In November, it was decided to pilot the on-site survey by visiting two or three facilities and then, based on this experience, revise the survey form and procedures, if needed. During December and January, Unit staff populated the Form with real data for a selected DEC Region 8 M2P2 facility in order to evaluate whether the form needed to be revised based on the experience of actually using it, and to locate and assess the availability and usability of DEC and EPA information sources (e.g., how easily and quickly can data be accessed?, in what format? are copies of electronic files downloadable?, is data quality adequate?).

Discussion with M2P2 Coordinators

At the biannual meeting of the nine DEC Regional M2P2 Coordinators with the P2 Unit in January 2003, Unit staff discussed the proposed survey plan, including the draft M2P2 Facility Survey form (see above). This form with instructions was passed out to the M2P2 Regional Coordinators attending the Coordinator meeting on site, while the form's purpose and the kind of information being requested was summarized for all of the Coordinators. Staff indicated that copies of the Form would be sent to all coordinators for their review and comments, and that the Form would primarily be filled out by the P2 Unit from information sources in the central office with verification and missing information then being provided by the DEC Facility Manager, and following this, by the Facility's personnel.

The Coordinators were also informed that P2 Unit staff was in the process of populating the Form with real data for a selected DEC Region 8 M2P2 facility to test the form (see above). The M2P2 Coordinators were notified that the Unit will be soliciting their comments and

recommendations for improvement on the form's format and contents and that the Unit staff was concurrently drafting a database to collect and manipulate the data once it has been collected.

Survey Form Database

During this period, staff began to develop a database to be populated with data extracted from the Survey Form. This effort resulted in identifying missing, duplicate, and inconsistent data fields in the original survey form which was redesigned to make it more internally consistent and to make the form more computer friendly. Also the database design and construction resulted in a better understanding and documentation of the logical relationship between data. The database was redesigned as required to reflect these changes.

C. P2 Unit's *Metrics Listing*

Using the Northeast Waste Management Officials' (NEWMOA) *Metrics Menu* as a model, the P2 Unit has adopted and produced a set of 26 P2 metrics, which it has titled the *NYS DEC P2 Unit's Metrics Listing*. This is intended as a high level guide and reference for the various measurement/reporting efforts which the P2 Unit is currently conducting, and which it plans to carry out in the future.

The P2 Unit has been filling in the *Metrics Listing's* metrics descriptive fields and making its language more consistent. As this is being done, it became clear that it would be advisable to rearrange the *Listing* into a tabular format to make the logic and interrelationship of the metrics easier for a user to understand and for a metrics designer to update and cross reference. This, in turn, will make it easier to use the *Listing* for design and construction of the Metrics database, including its definitions and data relationships. This effort is still in process.

Relationship between the *Metrics Listing* and the P2 Unit's Metrics Information Collection/ Reporting Systems

The P2 Unit regards the *Metrics Listing*, as NEWMOA regards its *Metrics Menu*, as a "living document," which will evolve as new areas of measurement become of concern and as practical knowledge accumulates as the unit actually implements the metrics, i.e., by designing and implementing the required metrics information collection and reporting systems.

Ultimately, as the metrics databases are finalized, the metrics definitions, data characteristics, and data relationships outlined in the *Listing* can act as a semi-formal "data dictionary" and assist in any required data modeling. If P2 Unit metrics systems evolve to be more fully integrated across P2 Unit metrics areas, there will be a greater need for the definitions and descriptions of the *Listing* to be more structured and formalized into a formal data dictionary. The need for a data dictionary would

proportional increase if, and as, it was decided to link and/or synchronize the P2 unit's metrics with one or more other metrics systems, within and outside of the agency.

III. Other

Continued Participation in NEWMOA's Metrics Initiative

The P2 Unit (along with representatives from the seven other NEWMOA States and EPA) has been involved with a NEWMOA-led multi-year metrics initiative, which included the issuance of the NEWMOA *Metrics Menu* and the design and prototyping of a related metrics database. It should be noted that the P2 Unit and similar units in the other NEWMOA States have signed a "Memorandum of Agreement" to utilize the *Metrics Menu* and to report back to the group measurement results and design and implementation issues, as their respective implementation efforts proceed.

During this period Staff continued to participate in this effort, which mostly consisted of commenting on (along with other NEWMOA States, and more recently, other States and organizations from around the country) the structure and contents of NEWMOA's database, including the data entry screens and proposed reporting formats.

In October, staff participated on the National Pollution Prevention Roundtable's (NPPR) Pollution Prevention Integration and Innovation (P2I2) Workgroup phone conference on Metrics Projects being carried out by NEWMOA and the Region X Pollution Prevention Coordinators Group/Pacific Pollution Prevention Resources Center (PPRC). The latter is a consortium of pollution prevention offices at the local, State, and Federal levels located in EPA's Region X (the Northwest). There were attendees from various agencies including EPA Headquarters and EPA Regions I, IV, VII, and VIII, and X; and Michigan, Nebraska, New Jersey, New York State's Environmental Facility Corporation, and the State of Washington.

Longer Term Metrics Substantiability Issues

Given actual and potential costs, and what will undoubtedly be increasing competition in the foreseeable future for organizational resources to carry out certain activities versus others, a metrics system must be designed to support, to the maximum extent possible, the ability to efficiently capture, quality assure, manipulate, and retrieve desired information. At the information capture front-end of the system, this would include maximizing the use of data collection instruments that provide unambiguous choices, e.g., "yes/no's," a number of specified choices, versus "open-ended" questions. This would prompt more comprehensive and standardized reporting by survey respondents. It would also speed up data entry and allow lower-level support staff to do it, both of which would minimize data entry costs.

On the other hand, "qualitative" free-form answers to open-ended questions will continue to be very valuable because they directly reflect the language and concerns of the responder and they may

produce information and insights not anticipated, some of which may actually reflect issues, concerns, or suggestions that are more generally held by the target population. Also, even for questions which provide a menu of choices, a standard survey practice which the Unit subscribes to and uses, is the provision of “Other (please specify)” as the final choice. This allows for the collection of information from the respondents not contained in the standardized choice list. This choice option also obviously requires some professional judgement if these open-ended responses are to be summarized or commented on.

More generally, continuous care needs to be taken to ensure that the system is easy to understand, update, and use, and that the information is accurate and reliable, so that the benefits are worth the resources needed to collect and quality assure the information and to maintain and enhance the supporting computing infrastructure.